Initial	Date
[illegible]	3/20/11
CMC	3/16/11

BA WTR
WR ND
Mail Stop 60189

MAR 2 1 2011

Memorandum

To: Project Leader, Tewaukon National Wildlife Refuge Complex

From: Chief, Division of Water Resources

Subject: 2010-2011 Annual Water Use Report/Management Plan

The subject reports for Tewaukon and Storm Lake National Wildlife Refuges have been reviewed and approved as submitted.

The 2011 Water Management Plan for Tewaukon NWR will be forwarded to the North Dakota State Engineer's Office as your 2011 State Operation Plan.

Attached is the signed approval page for your files. Thank you for your timely submission of the report.

S/ MEGAN ESTEP

Attachment

bcc: WTR rf

WTR:CCordova:cc:03/1/2011
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Signature Page

2010 Water Use Report

2011 Water Management Plan

Submitted By: _____ Date: 3/09/2011
Rob Bundy, Project Leader

Reviewed By: _____ Date: 3/24/11
Chief, Water Resources Division

Approved By: _____ Date: 3-11-11
Refuge Supervisor

Concurrence: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Tewaukon National Wildlife Refuge Complex
2010 Water Use Report
2011 Water Management Plan

REFUGE MANAGED WETLANDS

CCP Refuge 1.5 Objective: Annually provide for approximately 20% in dry, 20% in shallow, 20% mid-depth, and 20% open water wetland conditions on Refuge managed wetlands and manage remaining 20% as a reserve to adjust to local climatic and habitat conditions.

1. **List of Water Rights**
   See Appendix 1.

2. **Water Use - 2010**

Month	Temperatures		Precipitation	
	High (Average)	Low (Average)	Rain (inches)	Snow (inches)
January	17.1	- 1.8	0	10
February	18.8	- 0.3	0	12
March	41.6	26.0	0	2
April	63.1	38.6	3.38	2
May	66.8	46.8	2.22	0
June	77.5	56.4	3.23	0
July	84.3	60.6	3.27	0
August	84.6	60.9	2.25	0
September	68.0	46.3	5.98	0
October	62.1	37.7	2.19	3
November	41.4	20.9	0	4
December	17.2	2.6	0	18
Totals:			**22.52**	**51**

Information taken from ND Agricultural Weather Network website http://ndawn.ndsu.nodak.edu/

Pool 1 (Lake Tewaukon): Pool went into the spring at 1148.20. The Lake peaked on 3-20-10 at 1151.40. Heavy rains helped keep the lake full and freeze up at 1148.14 in late December.

Parker Bay (east end of Lake Tewaukon): Boards remained in place to maintain a three foot water depth. Freeze up elevation was 1148.40.

Pool 2 (Cutler Marsh): Water was held in Pool 2 as low as possible to promote emergent vegetation. The dike was overtopped on 3-18-10 at 1155.60 and remained overtopped until approximately 3-2-10. Freeze up was at 1147.81.

Pool 2A: Freeze-up was 1152.

Pool 3 (Maka Pool): Water overtopped on 3-18-10 at 1160. Water was maintained as low as possible to facilitate vegetation growth. Freeze up was at 1151.49

Pool 3A: Pool followed Pool 3 elevations.

Nickeson Bottoms: This pool only received local inflows. Attempts were made to lower water levels whenever possible. Freeze up level was approximately 1153.

Pool 4 (River Pool): Pool 4 dike was over-topped on 3-18-10 and remained until approximately 3-30-10. Attempts were made to maintain the level at 1158.85. Freeze up at 1155.52.

Pool 5: Staff attempted to keep the pool as dry as possible to repair dike. Dike repair was completed in October and the pool was filled and freeze up occurred at 1156.

Pool 5A: Staff attempted to keep the pool as dry as possible to repair dike. Dike repair was completed in October and the pool was filled and freeze up occurred at 1161.

Pool 6: Structure and dike repaired in September 2008. Pool filled and maintained at 1168. Pool froze up at 1163.96.

Pool 7: Pool filled to 1172.55 on April 3rd. Freeze-up was at 1172.38.

Pool 7A: Pool peaked at 1175.40 on April 3rd. Freeze up was at 1173.52.

Pool 8 (Hepi Lake): On March 8th, Pool 8 was at 1172 and continued to rise due to inflows. Boards were left out to lower the water level. Freeze up was at 1171.74.

Pool 9: Pool began year at 1166 and froze up at approximately 1166.

Pool 10: Pool began year at 1175 there was no flow into this pool except local precipitation. Freeze up occurred at approximately 1175.24.

Pool 11 (West White Lake): This pool level peaked at 1150.86 on April 23rd and boards were pulled on to dry up the pool. Freeze up occurred at 1148.01.

Pool 12 (East White Lake): Pool 12 received inflows from Pool 11 and when the water level got high enough it flowed into Pool 2 to the Wild Rice River. By freeze up, Pool 12 was at 1148.01.

Pool 13 (Mann Lake): Local runoff from the high amount of precipitation came into Pool 13. Evaporation had lowered it to approximately 1207 at freeze up.

Pool 14 (Sprague Lake): The lake started at 1214.40 in the spring and filled to 1217.59 from local in-flows on March. Lake was maintained at approximately 1214.4 throughout the summer. Freeze up at approximately 1214.49 on 11-23-10.

Pool 16 (Horseshoe Slough Group):
Only local inflows – keep out water from Wild Rice River. Attempts were made to release water into Wild Rice River when possible. Work was completed on the structure at the Wild Rice River in the late fall of 2009.

Pool A – Freeze up occurred at 1207.90

Pool B – Freeze up at 1207.90
Pool C – Freeze up at 1207.90
B West – Freeze up at 1207. 90
B North – Freeze up at 1207. 90
C North – Freeze up at 1207. 90
C South and C East – Freeze up at 1207.90

3. **Impoundment Data**

Please see the attached chart (Appendix 2) for capacities for each pool at various elevations. No formal inflow/outflow records were maintained.

4. **Location Map**

See attached Refuge map (Figure 1 and 2) with all the management pools delineated.

Figure 1: Tewaukon Unit Managed Wetlands

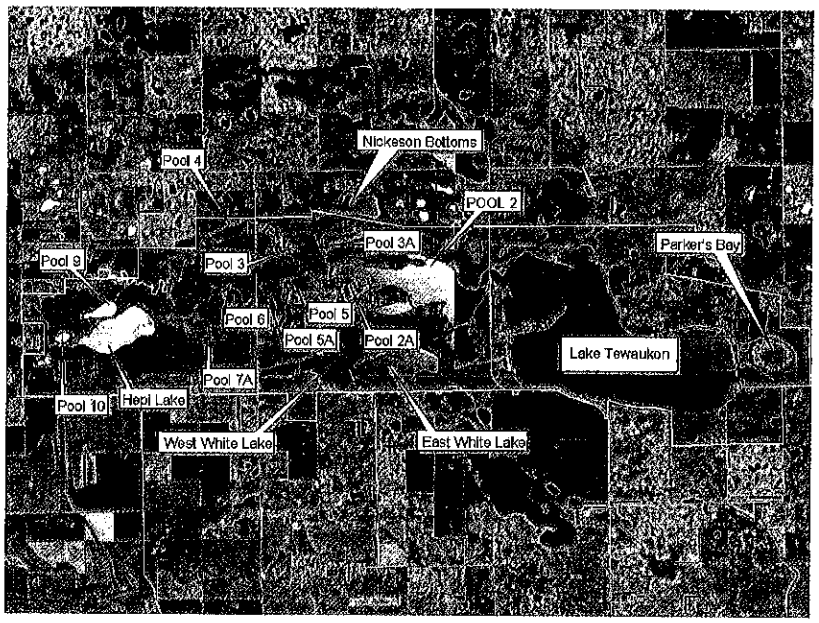
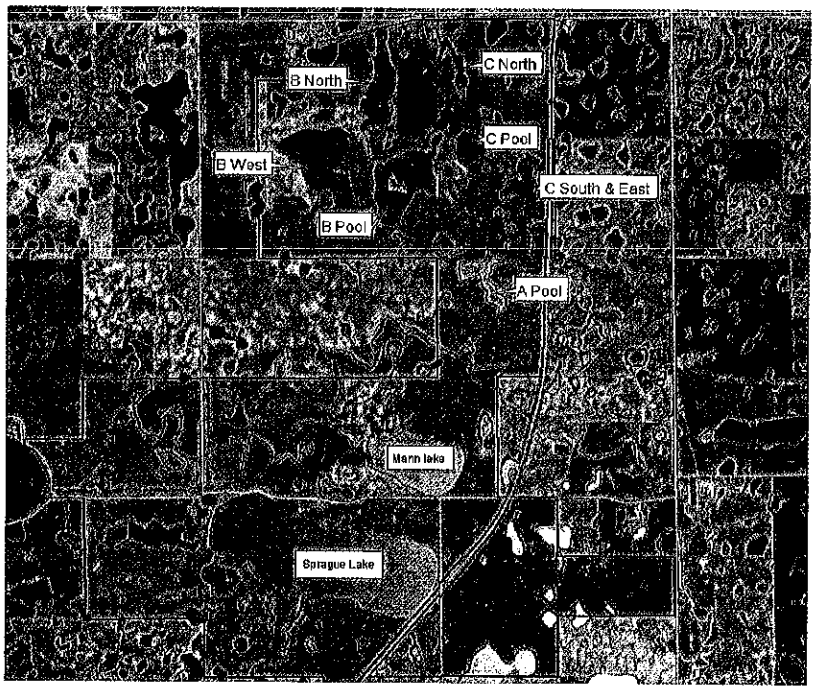


Figure 2: Sprague Lake Unit Managed Wetlands



5. 2011 Plans

Pool 1 – Lake Tewaukon - Maintain elevation at 1148 (full pool)

Parkers Bay - Maintain at 2 feet in depth, below 1148, with minimal inflows to promote vegetation growth

Pool 2 - Maintain elevation at 1148 or below to encourage emergent plant and invertebrate population growth.

Pool 2A - Maintain elevation at 1154.

Pool 3 - Maintain elevation at 1148.

Pool 3A - Maintain elevation at 1154-1155.

Nickeson Bottoms - Continue to drop the level of water if possible. Restrict inflows.

Pool 4 - Lower elevation to 1158.

Pool 5 - Fill and maintain elevation at 1156.

Pool 5A - Fill and maintain elevation at 1161.

Pool 6 - Maintain pool at 1168.

Pool 7 - Maintain pool elevation at 1172.

Pool 7A - Maintain pool at 1175.

Pool 8 - Maintain pool at 1172 or below.

Pool 9 - Maintain pool at 1164.

Pool 10 - Maintain pool at 1172.24. No inflows.

Pool 11 – West White Lk - Maintain pool at 1148.

Pool 12 – East White Lk - Allow pool to drop through evaporation and restricting inflows.

Pool 13 – Mann Lake - Lower pool as the Wild Rice River goes down. Restrict inflows.

Pool 14 –Sprague Lake - Maintain pool at 1214.

A Pool Water levels will be allowed to drop. Restrict inflows and pass water out if possible
B Pool Water levels will be allowed to drop. Restrict inflows and pass water out if possible
B West Water levels will be allowed to drop. Restrict inflows and pass water out if possible
B North - Water levels will be allowed to drop. Restrict inflows and pass water out if possible
C Pool (North and & C Pool) - Water levels will be allowed to drop. Restrict inflows and pass water out if possible

Appendix 1

List of Water Rights

Water Right Filing No. 57: Declaration of Filing dated September 1, 1934 claimed 104 surface acres, for 397 acre-feet storage and 312 acre-feet seasonal use for Clouds Lake (Pool 8) now called Hepi Lake from unnamed tributary to Wild Rice River. Listed on the same sheet as Lake Tewaukon/White Lake, as per RO(EN) Marshall Fox's 11-14-83 memo. Water use in pools 5 through 10 is covered under this right, with Hepi Lake to be drawn down to fill these pools.

Water Right Filing No. 64: Declaration of Filing dated September 1, 1934, for Lake Tewaukon and East and West White Lake (including Cutler Marsh), 1417 surface acres, for 7198 acre-feet storage, 4251 acre-feet seasonal from Wild Rice River and unnamed tributary.

Permit #1261: 4852 acre-feet storage and 2287 acre-feet seasonal use, for a total of 7139 acre-feet from the Wild Rice River for fish and wildlife use. This permit covers additional storage and seasonal use in Lake Tewaukon, Cutlers Marsh and West White Lake; 409 acre-feet seasonal use to replace water to be diverted from the watershed by Sargent County Water Conservation District project; and total storage and seasonal use for Pools 3 and 4. Priority date December 28, 1964.

Tewaukon NWR #1262: 1,130 acre-feet yearly (635 acre-feet storage and 495 acre-feet seasonal use) for Sprague Lake, dated December 28, 1964, diversion from an unnamed creek in the SE1/4 NW1/4, Sec. 2.

Tewaukon NWR #1263: 686 acre-feet yearly for Mann Lake (total of 236 acre-feet comprised of 107 acre-feet storage and 129 acre-feet seasonal use) and Horseshoe Slough (total of 450 acre-feet comprised of 270 acre-feet storage and 180 acre-feet seasonal use) dated December 28, 1964, diversion from the Wild Rice River.

Tewaukon NWR #3816 Nickeson Tract: 571 acre-feet (474 acre-feet storage, 97 acre-feet annual use) for the Nickeson Bottoms, a tract jointly owned by the ND Game and Fish Department, US Bureau of Reclamation and US Fish and Wildlife Service (FWS). Diversion is from the Wild Rice River, W ½ Section 27, T. 130 N., LTL, R. 54 W. Priority date August 15, 1985. Received perfected water permit on August 14, 1997. Recorded in the Register of Deeds, Sargent County on March 3, 1998.

In December, the Service submitted an application for prescriptive water rights pursuant to the provisions of State Senate Bill No. 2182 for 859 acre feet.

Appendix 2

Pools, Elevations and Acres

Pool No. & Name	January 1, 2010			December 31, 2010		
	Elevation	Surface Acres *	Volume (acre ft.)*	Elevation	Surface Acres *	Volume (acre ft.) *
Pool 1 - Tewaukon	1148.2	1061	8587	1148.14	1061	8523
- Parker's Bay	1148.2	85	302	1148.40	87	319
Pool 2 - Cutler's Marsh	1148.2	192	418	1147.81	170	347
Pool 2A	1152.0	24	46	1152.0	24	46
Pool 3 - Maka Pool	1151.0	32	68	1151.49	39	86
Pool 3A	1151.0	0	0	1154.89	11	19
Nickeson Bottoms	1153.0	-	--	1152.85	-	-
Pool 4 - River Pool	1156.9	45	64	1155.52	20	21
Pool 5	1157.0	1	0	1156.0	0	0
Pool 5A	1157.0	0	0	1161.0	1	1
Pool 6	1167.0	5	7	1163.96	0	0
Pool 7	1171.0	9	9	1172.38	17	13
Pool 7A	1171.0	0	0	1173.52	6	0
Pool 8 - Hepi Lake	1172.0	86	174	1171.74	85	152
Pool 9	1166.0	11	35	1166	11	35
Pool 10	1175.5	8	22	1175.24	7	20
Pool 11 - West White Lake	1149.0	60	109	1148.01	43	58
Pool 12 - East White Lake	1149.0	105	592	1148.01	101	490
Pool 13 - Mann Lake	1205.0	42	75	1207.0	46	164
Pool 14 - Sprague Lake	1214.40	195	1708	1214.49	198	1726
Pool 16 - Horseshoe Slough						
- Pool 1 (A Pool)	1207.68	59	74	1207.90	66	88
- Pool 2 (B Pool)	1207.68	54	203	1207.90	55	215
- Pool 3 (C Pool)	1207.68	12	49	1207.90	12	52
- Pool 4 (B West)	1207.68	56	199	1207.90	57	212
- Pool 5 (B North)	1207.68	36	83	1207.90	38	91
- Pool 6 (C North)	1207.68	12	14	1207.90	14	17
- Pool 7 (C South & C East)	1207.68	25	67	1207.90	25	72

Appendix 3

WATER USE REPORT
SHORT FORM

Storm Lake NWR, Sargent County
Station Name

Spring 2010
Date of Inspection

Declaration of Filing: 9/01/1934
Water Right No.
Several
(729 acre-feet storage)
(516 acre-feet seasonal)

Drainage ditch (legal)
Sources(s)

Means of Diversion Uncontrolled
Rate Unknown

Water Diverted: Yes _X_ No ____

Water Level est 654 acre-feet
(Elevation or Est. Storage Amount)

* Impoundment(s): Yes ___ No _X_
* Well(s)
Free Flowing none gpm
Pumped_____ gpm

Surface irrigation_____
(Crop) _____
Fish & Wildlife _X_virtually no public use
Stock_____

Overall Climatic Conditions: Heavy rains in the fall of 2009 plus the large amount of snowfall in the winter of 2010 contributed to flooding in the eastern third of North Dakota. In 2009 the Corps of Engineers built a permanent dike to protect the town of Milnor from overland flooding. The permanent dike kept flooding in the town of Milnor to a minimum.

Condition of Facilities: A diversion dam at the head of the feed ditch serving Storm Lake washed out well before 1976. The town dug a ditch beside the existing structure to allow for flood waters to move out of the town. At the end of 1997 the town placed a culvert with flap gate at an agreed elevation by a special use permit. The culvert is well above the existing structure and will allow flood waters to move out without impacting the water right. The ditch through the golf course was cleaned out in 1997 through a special use permit to remove flood waters. At that time the Golf Course placed two new bridges on the fee title property without notification of the Refuge. An agreement with the Service was signed to mitigate the mowing of the fee title property with no mow areas along the golf course edges was signed in 1999. In 2005, the Service issued a permit to the City to use Glyphosate to manage cattail growth in the ditch. In 2006 an agreement between the US Fish & Wildlife Service and the city of Milnor was signed to lower an existing culvert. The culvert maintains the lake elevation and lowered the management level in Storm Lake by one foot (from 5 to 4 feet).

Proposed Water Program: No water management capability is present. Water runs down the ditch into the lake to an unknown degree each spring. Water did fill Storm Lake in 1993. High waters and overland flooding have resulted in the feeder ditch becoming an outlet for Storm Lake water into the legal drain.

Comments: The lake serves as a waterfowl loafing site by Canada geese, canvasbacks, redheads, lesser scaup, mallards, teal, gadwalls during low water years. Water levels fluctuate without management. If active management was initiated, some degree of improvement might be gained by a cycle of draw down management. It is questionable if the benefits would be worth the costs.